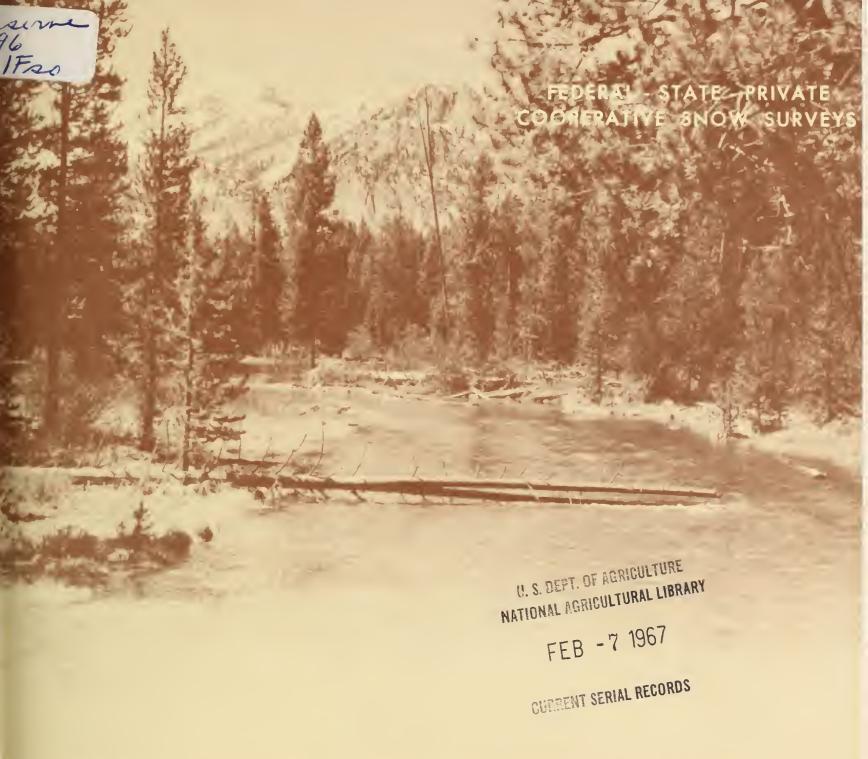
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WATER SUPPLY SUMMARY AND OUTLOOK for OREGON

UNITED STATES DEPARTMENT of AGRICULTURE...SOIL CONSERVATION SERVICE

and

OREGON STATE UNIVERSITY

and

STATE ENGINEER of OREGON

Data included in this report were obtained by the agencies named above in cooperation with other Federal, State and private organizations.

OCT. 1, 1966

UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

To Recipients of Water Supply Outlook Reports:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season as they affect runoff will add to be an effective average. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1400 snow courses in Western United States and in the Columbia Basin in British Columbia. In the near future, it is anticipated that automatic snow water equivalent sensing devices along with radio telemetry will provide a continuous record of snow water equivalent at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data or reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

Listed below are water supply outlook reports based on Federal-State-Private Cooperative snow surveys. Those published by the Soil Conservation Service may be obtained from Soil Conservation Service, Room 507, Federal Building, 701 N. W. Glisan, Portland, Oregon 97209.

PUBLISHED BY SOIL CONSERVATION SERVICE .

REPORTS	ISSUED	LOCATION	COOPERATING WITH
RIVER BASINS			
WESTERN UNITED STATES	MONTHLY (FEBMAY)	PORTLAND, OREGON	ALL COOPERATORS
BASIC DATA SUMMARY	OCTOBER 1	PORTLAND, OREGON	ALL COOPERATORS
STATES			
ALASKA	MONTHLY (MAR MAY)	PALMER, ALASKA	ALASKA S.C.D.
AR I ZON A	SEMI-MONTHLY (Jan. 15 - Apr. 1)	- PHOENIX, ARIZONA	SALT R. VALLEY WATER USERS ASSOC. ARIZ. AGR. EXP. STATION
GOLORADO AND NEW MEXICO	MONTHLY (FEBMAY)	_ FORT COLLINS, COLORAD	COLO. STATE UNIVERSITY COLO. STATE ENGINEER N. MEX. STATE ENGINEER
IDAHO ————————————————————————————————————	MONTHLY (JANJUNE)_	BOISE, IDAHO	IDAHO STATE RECLAMATION ENGINEER
MONTANA	MONTHLY (JANJUNE)_	BOZEMAN, MONTANA	MONT. AGR. EXP. STATION
NEVADA	MONTHLY (JANMAY)	RENO, NEVADA	NEVADA DEPT. OF CONSERVATION AND NATURAL RESOURCES - DIVISION OF WATER RESOURCES
OREGON -	MONTHLY (JANJUNE)_	PORTLAND, OREGON	OREG. STATE UNIVERSITY OREGON STATE ENGINEER
UTAH	MONTHLY (JANJUNE)_	_ SALT LAKE CITY, UTAH	UTAH STATE ENGINEER
WASHINGTON	MONTHLY (FEB. JUNE).	SPOKANE, WASHINGTON	WN. STATE DEPT. OF CONSERVATION
WYOMING	MONTHLY (FEBJUNE)	CASPER, WYOMING	WYOMING STATE ENGINEER
	PUBLISHED F	BY OTHER AGENCIES	
REPORTS	ISSUED	or arrian Adelitored	AGENCY
BRITISH COLUMBIA	MONTHLY (FEBJUNE)	WATER RESOUR FOREST AND WA' VICTORIA, B.C	CES SERVICE, DEPT. OF LANDS. TER RESOURCES, PARLIAMENT BLDG., ,, CANADA
CALIFORNIA	MONTHLY (FEBMAY)	CALIF. DEPT. C	OF WATER RESOURCES, P.O. BOX 388, ALIF.

WATER SUPPLY SUMMARY AND OUTLOOK for OREGON

ISSUED

OCTOBER 8, 1966

Report prepared by

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and

BOB L. WHALEY, Assistant Snow Survey Supervisor

SOIL CONSERVATION SERVICE 1218 S.W. WASHINGTON ST. PORTLAND, OREGON 97205

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WATER SUPPLY SUMMARY AND OUTLOOK for OREGON

October 1, 1966

Oregon's reservoirs clearly demonstrated their value this year, providing adequate irrigation water supplies to most of 425,000 thirsty acres surrounded by drought-ridden lands which produced greatly reduced crops or very little. Nine out of twenty-four reservoirs have little or no carryover at the end of this season, but twelve reservoirs closed the year with carryover 80 percent of average or better.

Records of the U. S. Weather Bureau, September 1, 1965 to September 1, 1966, show precipitation near normal in the Cascades and western Oregon but falling off rapidly to about half normal in far eastern Oregon. Significantly, precipitation in the spring and summer agricultural season (April 1 to September 1) was mostly far below normal with records of 50 percent down to 27 percent normal scattered throughout the state.

Streamflow east of the Cascades was below normal all winter and dropped rapidly to extreme lows following a greatly deficient spring runoff. Records at key streams indicate summer flows approached record-low conditions on several eastern Oregon watersheds. U. S. Geological Survey provisional records show September flow of the John Day River at Service Creek rose to 61 percent average from spring and summer flows which held between 24 to 34 percent average. The total water year flow of the John Day (October 1, 1965 to September 30, 1966) was only 39 percent of average compared with the 15 year period 1948-1962.

Watershed soils have received a surface wetting this fall with some attendant greening on range lands but the underlying soils have not received much of any water and the situation is relatively dry as it usually is at this date. Rain is needed.

Winter conditions of snow accumulation will have to be well above average to produce adequate streamflow next season.

Details of the water supply situation in various Oregon regions are as follows:

Owyhee-Malheur Watersheds

1966 irrigation water supplies in Malheur County were adequate for the Owyhee Project and the Vale-Oregon and Warmsprings Irrigation Districts, but were not sufficient for the Jordan Valley District and Orchards Water Company. An additional 80,000 acres of land had little, if any, irrigation water. Drought conditions in the county approached the extremely dry situation that occurred in the "thirties."

Carryover water supplies are good in Lake Owyhee with 270,100 acre feet compared with 513,000 a.f. a year ago. Also satisfactory is the 32,900 acre feet held in Warmsprings reservoir compared with 128,400 acre feet a year ago. Not so encouraging is the 3,500 acre feet held in Agency Valley, and the 1,100 held in Bully Creek, where a total of 18,200 a.f. and 16,700 a.f., respectively, was held a year ago. Antelope reservoir on Jordan Creek is empty compared with the 12,000 a.f. it held a year ago.

Inflow to Lake Owyhee, April through September, (figures provided by the Owyhee Project) was only 101,474 acre feet compared with the average of 381,300 a. f. This flow was considerably below the forecast figure of 160,000 a.f., which was released on April 1, due partly to the deficient precipitation and unusual evaporation conditions.

Burnt-Powder-Pine-Grande Ronde Watersheds

The 1966 summer season in Baker, Union, and Wallowa Counties will long be remembered for the severe shortage of water. Cattlemen and irrigators alike were troubled with lack of water for range as well as for pasture and hay lands. Many an old-time resident compared the situation with the drought of the "thirties."

Water stored in Wallowa Lake and Unity Reservoirs furnished barely enough water for the usual irrigation and these supplies are now virtually exhausted. Wallowa Lake has only 1,900 acre feet to carry over compared with 28,800 a.f. last year. Unity reservoir has only 700 acre feet compared with 7,000 a.f. a year ago.

Streamflow was far below average with the Grande Ronde at LaGrande flowing at 52 percent of the 15-year average (1948-62) in March and only 23 percent average in May. Cool temperatures in September have allowed mountain streams to increase slightly but flows are still well below the average.

Watershed soils have had some surface wetting by recent rains, but underlying soils are relatively dry as they usually are at this time of the year. Rain is sorely needed.

Umatilla-Walla Walla Watersheds

The 1966 summer season in Umatilla, Morrow, and Gilliam Counties has been extremely dry with attendant reduction or loss in crops. Some old-timers have compared the situation with the "thirties."

Stored water supplies failed to last out the season. Coldsprings Reservoir was exhausted about August 26, and McKay reservoir made its last delivery about September 6. Precipitation from April 1 through September 1 was well below normal: 43 percent at Pendleton, 50 percent at Hermiston, 51 percent at Heppner, 42 percent at Condon, and 54 percent at Moro, according to U. S. Weather Bureau records.

Flow of most streams remained below average all winter according to records of the U. S. Geological Survey. Summer flows dropped to 20 and 30 percent average and have shown only slight increases in recent weeks.

Good fall rains are needed to recharge watersheds and to undergird the expected snowpack which will have to be much above average to provide average streamflow next summer.

Upper John Day Watersheds

Upper John Day watersheds have been extremely dry this summer with greatly deficient flows in the main streams and small tributaries mostly dried up. Precipitation, October 1, 1965 through April 1, 1966, was about half normal, but was only one-third normal in the past six months.

Flow of the John Day River at Service Creek, according to provisional records of the U. S. Geological Survey, was 61 percent of the 15 year average (1948-62) for September but was only 39 percent average for the water year October 1, 1965 through September 30, 1966.

Watershed soils are still extremely dry with recent rains wetting only the top few inches. Many springs that normally run well all summer have dried up this year. Range lands that were in good condition prior to the drought maintained quite a vigorous growth, but range lands that were poor at the beginning have been hit hard by the lack of moisture.

Rain is sorely needed and would be most beneficial if received in large amounts before the winter freezeup and beginning of the winter snow accumulation.

Upper Deschutes and Crooked River Watersheds

The 1966 irrigation season has been extremely dry in the mid-state region, but most irrigated lands had adequate water supplies because of good storage facilities.

Carryover storage in local reservoirs is close to average in Prineville, Crescent Lake and Wickiup reservoirs, but low in Crane Prairie and Ochoco reservoirs where stored water is now 12,200 and 9,400 acre feet respectively. Crescent Lake holds 40,500, Prineville has 90,800, and Wickiup has 28,300 acre feet at the end of the season.

U. S. Weather Bureau records show precipitation since April 1 has been about half of the average and only about 70 percent average since September 1 a year ago. Shortage of precipitation is apparently reflected in reduced flow in springs and small spring-fed streams as well as in lower water levels in key wells.

Flow of the Deschutes River at Moody since October 1 last year totals about 78 percent of the 15 year average (1948-62) according to provisional records of the U. S. Geological Survey. Flow in the same period a year ago averaged about 102 percent of the average.

The lowered base flow of streams in this central Oregon region indicates the need for much above average precipitation and snowfall this winter to provide average streamflow next summer.

Hood River-White River-Mile Creeks-Lower Deschutes Watersheds

1966 Irrigation water supplies in the Hood River-Wasco County area were slightly below average this summer along the major streams but definitely short in the Mile Creeks, Mill Creek, Mosier Creek watersheds.

U. S. Weather Bureau records show precipitation at Parkdale since April 1 has been 38 percent of the normal and only about half normal for the entire year since September 1 of last year.

Willamette Watersheds

1966 summer streamflow in the Willamette valley has been much below the 15-year average (1948-62). Provisional records from the U. S. Geological Survey indicate the water year flow (October 1, 1965 through September 30, 1966) of the Middle Fork of the Willamette below the North Fork has been only 63 per cent of average with flow during July down to 41 percent. Flow of the Willamette River at Albany has been lower in only one August in seventy-five (75) years of record.

Records by the U. S. Weather Bureau show total precipitation at Eugene for the year ending on September 1, 1966 was about 96 percent normal but during the months since April 1 the total was only 27 percent of the normal.

Total stored water supplies average about 92 percent average on this date, but only 57 percent of the supplies on hand one year ago.

Rogue-Umpqua Watersheds

The 1966 irrigation season in Douglas, Jackson, and Josephine Counties was satisfactory for orchard crops but has been deficient for pastures and some other crops.

Provisional records of the U. S. Geological Survey indicate flow of the Rogue River at Raygold for the water year beginning October 1, 1965 has been 76 percent of the 15 year average (1948-62). Flow actually dropped to 55 percent average during June. Flow of the Umpqua River near Elkton dropped to 38 percent average in June.

Records of the U. S. Weather Bureau show total precipitation at Medford for the year ending September 1, 1966 was about 83 percent normal but during the months since April 1 the total was only 72 percent.

Storage in five local reservoirs in Jackson County totals 56,900 acre feet compared with 80,400 acre feet last year when carryover was unusually high. The 15-year average figure of carryover is 70,000 acre feet.

Klamath Watersheds

Water supplies in Klamath Basin in 1966 were adequate and carryover water supplies in local reservoirs are remarkably good in spite of a year of deficient precipitation.

Provisional records of the U. S. Geological Survey indicate inflow to Upper Klamath Lake for the water year beginning October 1, 1965 has been 79 percent of the 15-year average (1948-62). Flow actually fell to a low 50 to 55 percent of average in June, July and August.

Ground-water supplies are lower than a year ago as would be expected from a deficient precipitation, indicated by U. S. Weather Bureau records at Klamath Falls, where total for the year since September 1, 1965 is only 69 percent normal.

Lake County Watersheds

1966 water supplies in Lake County have been greatly deficient but lands served from Drews Valley and Cottonwood reservoirs have had a satisfactory season, although carryover water is not up to par in these reservoirs.

Although U. S. Weather Bureau records indicate that precipitation in the region has been deficient, Lakeview has had 74 percent of the normal, the deficiency is not as great as that in extreme eastern Oregon.

Many springs have dried up or show a greatly diminished flow. Stock water on the range is extremely scarce and many long-time residents are comparing current conditions with the dry "thirties."

An extremely dry year in 1967 is expected unless much above normal precipitation and snowpack is received this winter.

Harney Basin Watersheds

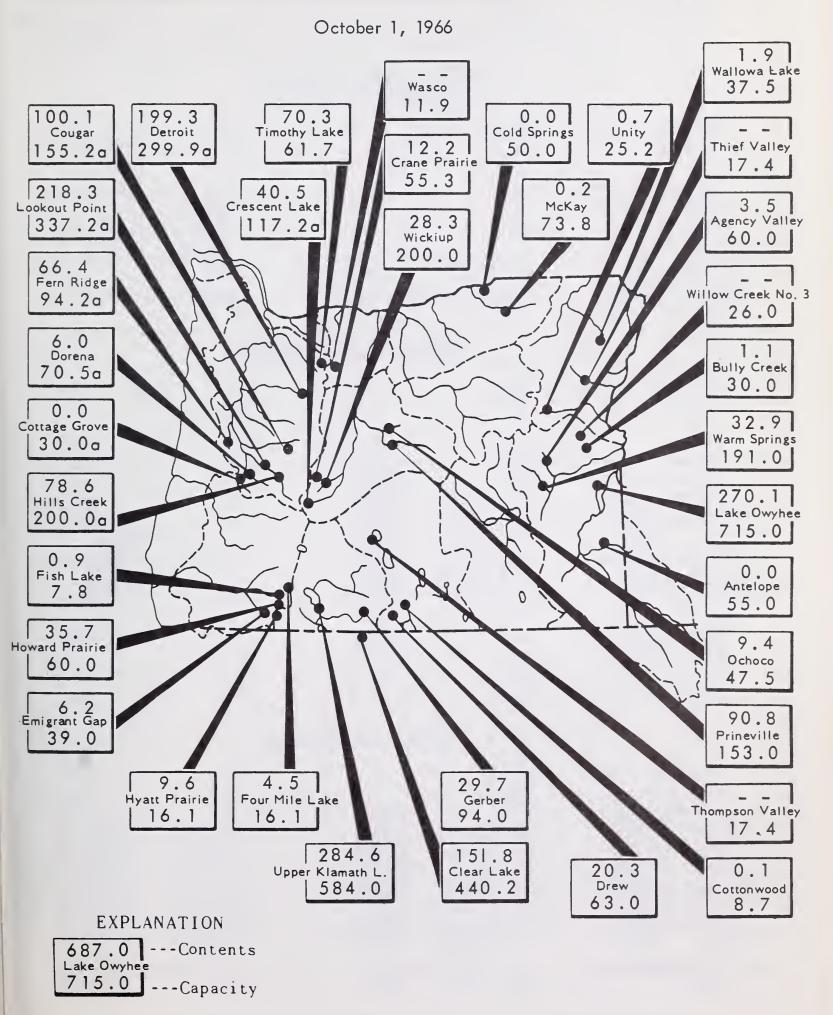
Water supplies in 1966 have been greatly deficient with conditions closely similar to the extremely dry year of 1935.

U. S. Weather Bureau records of precipitation at Burns indicate only 67 percent of the normal total was received since September 1, 1965. However, mid-September storms have apparently brought fall soil moisture conditions to a point well above average on the Steens Mountains. Presumably the situation in north Harney watersheds is not so satisfactory.

Shortage of stock water has made many range areas unusable and hay crops are definitely short this season.

An extremely dry year in 1967 is expected unless much above normal precipitation and snowpack is received this winter.

STORAGE STATUS of OREGON RESERVOIRS usable contents in thousands of acre feet



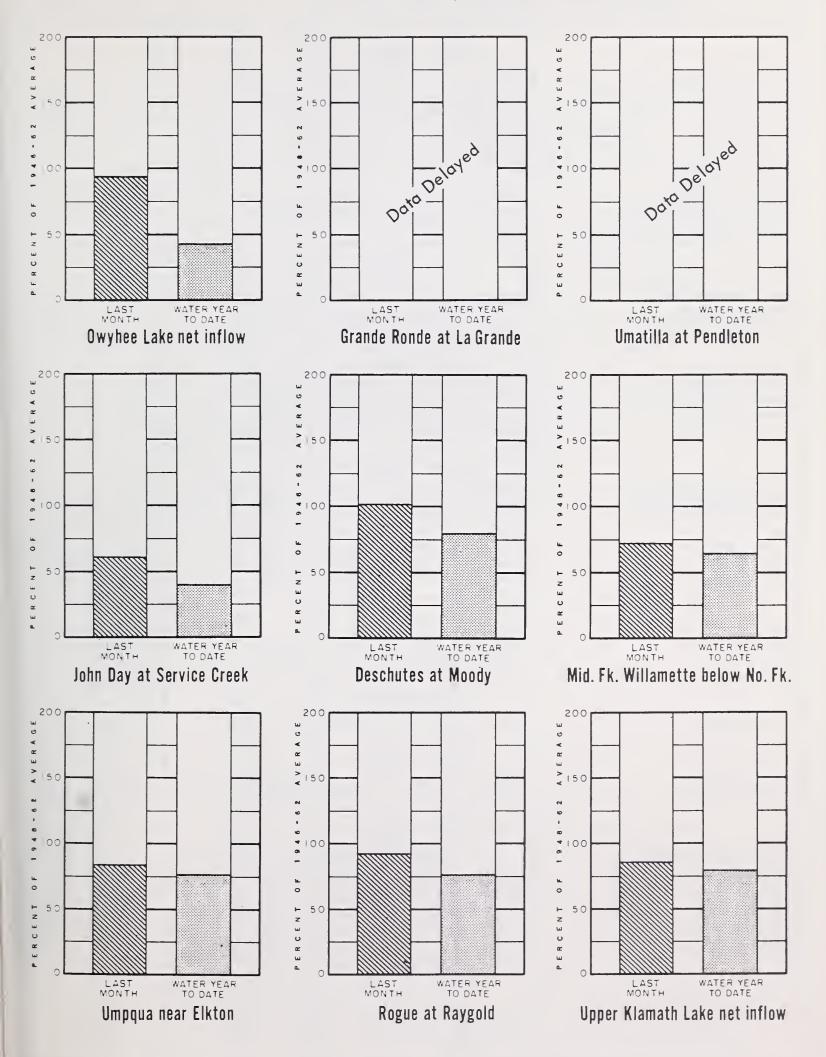
⁽a) Multiple purpose reservoir - space reserved for flood runoff.

N. R. - No report.

RESERVOIR	USABLE CAPACITY (Thous. A.F.)	THOUSANDS ACRE	FEET IN STOR 1965	AGE ABOUT OCT. 1 15 year average 1948-62
		R COLUMBIA DRA ER SNAKE IN OR		
Antelope	55.0	0.0	12.0	
Owyhee	715.0	270.1	513.0	270.4
Agency Valley	60.0	3.5	18.2	7.8
Bully Creek	30.0	1.1	16.7	
Warmsprings	191.0	32.9	128.4	33.9
Unity	25.2	0.7	7.0	2.9
Wallowa Lake	37.5	1.9	28.8	13.6
	LOW	ER COLUMBIA DR	PAINAGE	
Cold Springs	50.0	0.0	0.0	3.0
McKay	73.8	0.2	23.4	8.7
Ochoco	47.5	9.4	22.6	15.5
Prineville	153.0	90.8	107.6	
Crane Prairie	55.3	12.2	31.8	32.9
Crescent Lake	117.2	40.5	59.3	39.2
Wickiup	200.0	28.3	108.9	38.1
Cottage Grove	30.0	0.0	2.0	7.5
Cougar	155.2	100.1	80.0	
Detroit	299.9	199.3	194.3	194.0
Dorena	70.5	6.0	8.0	14.3
Fern Ridge	94.2	66.4	37.5 139.0	45.9
Hills Creek Lookout Point	200.0 337.2	78.6 218.3	226.6	174.6
Timothy Lake	61.7	70.3	61.7	55.6
	<u>W.</u>	EST COAST DRAI	NAGE	
Fourmile Lake	16.1	4.5	8.6	6.4
Fish Lake8	7.8	0.9	5.3	2.1
Howard Prairie		35.7	46.4	
Hyatt Prairie	16.1	9.6	13.1	5.5
Emigrant Gap	39.0	6.2	7.0	11.0
Upper Klamath	584.0	284.6	420.6	295.4
Gerber	94.0	29.7	51.0	20.1
Clear Lake	440.2	151.8	221.8	157.3
Cottonwood	8.7	0.1	0.8	0.4
Drew	63.0	20.3	39.7	25.0

CURRENT OREGON STREAMFLOW

OCTOBER 1, 1966



Data furnished by U.S. Geological Survey; The Pacific Power and Light Co.; and North and South Boards of Control Owyhee Project.

ELEVATION 7800	DEPTH AREA	CAPACITY	DATE	THIS YEAR	LAST YEAR	2 YEARS AGO
	AREA	1				
7800	AREA	1				
7800		l				
6700 5900 5375 4450	72 48 42 48 30	16.8 16.7 16.9 18.2 12.5	8-30-66 9-28-66 9-28-66	15.0 ^f 5.6 14.3	 6.4 14.7	14.5 6.0 14.4
4390 5500 6800	48 48 42	19.3 12.8 11.0	10-6-66 8-30-66	13.2	14.6 10.2 ^f	13.9 8.3 ^f
4800 6200 5150	48 48 48	21.9 15.1 16.6	9-7-66	21.4 10.6 ^f	12.5 ^f	
	ARE	A 2				
5100 3925 5070	36 48 48	16.8 22.3 23.6	9-28-66 9-23-66 9-28-66	7.6 9.5 12.6	8.7 17.4 13.2	8.4 17.4 14.4
	AREA	7 3 I				
1700 4340 3925 5070	48 48 48 48	18.7 13.8 22.3 23.6	9-28-66 9-26-66 9-23-66 9-28-66	9.7 10.5 9.5 12.6	12.0 10.7 17.4 13.2	13.3 9.3 17.4 14.4
	ARE,	 				
4340 5900 5100	48 42 36	13.8 16.9 16.8	9-26-66 9-28-66 9-28-66	10.5 5.6 7.6	10.7 6.4 8.7	9.3 6.0 8.4
4540 6300 5150	36 48 36	14.1 16.7 10.6	9-28-66 9-29-66 9-28-66	10.3 9.9 7.0	9.9 10.9 7.3	8.9 9.4 7.0
	A RE.	A 5				
5670 4540 6300	24 36 48	9.0 14.1 16.7	9-28-66 9-29-66	10.3 9.9	9.9	8.9 9.4
	A RE	I A 10				
5090	42	14.0	9-29-66	6.8	8.6	8.0
	ARE	1 A 11				
5720 5320	42 48	14.5 15.3	9-29-66 9-27-66	7.2 4.4	8.8 6.6	7.8 4.8
	ARE	I A 12				
5900 7900 4450	42 48 30	16.9 15.0 12.5	9-28-66 9-21-66	5.6 7.8	6.4 8.3	6.0
6300 5150 4800 5000	48 48 36 48 24	16.4 16.7 10.6 21.9 6.6	9-21-66 9-29-66 9-28-66 10-4-66 9-2°-66	9.9 7.0 21.4 3.0	11.5 10.9 7.3 3.4	9.4 7.0 3.0
	4450 6800 4390 5500 6800 4800 6200 5150 5100 3925 5070 1700 4340 3925 5070 4340 6300 5150 5670 4540 6300 5150 5670 4540 6300 5150 5900 7900 4450 6900 6300 5150 4800	4450	## A ##	4450	4450	4450

The Following Organizations Cooperate in the Oregon Snow Survey Work

STATE

Idaho Cooperative Snow Surveys Nevada Cooperative Snow Surveys Oregon State University Oregon State Engineer and Corps of State Watermasters Oregon State Highway Engineers

Soil and Water Conservation Districts of Oregon

COUNTY

Douglas County Water Resources Survey FEDERAL

> Department of Agriculture Cooperative Extension Service Forest Service Soil Conservation Service Department of Commerce Weather Bureau

Department of the Interior Bonneville Power Administration Bureau of Land Management Bureau of Reclamation Fish and Wildlife Service Geological Survey National Park Service

Department of National Defense Corps of Army Engineers

PUBLIC UTILITIES

Pacific Power and Light Company Portland General Electric Company California-Pacific Utilities Company

MUNICIPALITIES

City of Baker City of La Grande City of The Dalles City of Walla Walla

IRRIGATION DISTRICTS

Arnold Irrigation District Associated Ditch Companies Burnt River Irrigation District Central Oregon Irrigation District East Fork Irrigation District Grants Pass Irrigation District Hood River Irrigation District Jordan Valley Irrigation District Juniper Flat Irrigation District Lakeview Water Users, Incorporated Medford Irrigation District Middle Fork Irrigation District North Board of Control - Owyhee Project North Unit Irrigation District Ochoco Irrigation District Rogue River Valley Irrigation District South Board of Control - Owyhee Project Squaw Creek Irrigation District Talent Irrigation District Tumalo Project Vale-Oregon Irrigation District

Warmsprings Irrigation District

PRIVATE ORGANIZATIONS

Amalgamated Sugar Company The Crag Rats, Hood River, Oregon

UNITED STATES DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE 1218 S.W. WASHINGTON ST. PORTLAND, OREGON 97205

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